

Title: Evaluation of dried blood spots as a feasible alternative to plasma for detection and quantification of HCV: A Pilot Study.

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Introduction: There are 6-10 million HCV carriers in India, of whom many are unaware of treatment. With the availability of directly acting antivirals, there is possibility of cure. Confirmatory diagnosis of HCV infection (HCV RNA detection) is essential prior to starting therapy. HCV RNA detection is not available in many parts of India. Shipment of plasma from distant places to referral laboratory may affect HCV RNA titres. Dried blood spots (DBS) provide an easy alternative for transporting samples to centres where HCV RNA testing is done.

Aims: Evaluating DBS samples as feasible alternative to plasma for HCV RNA detection and HCV core antigen estimation.

Methods: In this cross-sectional study, 40 consecutive patients' blood samples were collected from patients referred from the Liver Clinic. Whole blood was spotted onto two Whatman 903 cards. One card was incubated at 37°C and other at 4°C for 15 days, after drying. DBS was eluted and run in Abbott Real Time HCV assay. HCV was also quantified using Abbott ARCHITECT HCV core antigen assay for 29 of study patients. Results were compared with normal plasma values.

Results: The median log HCV RNA Value (MLHRV) in plasma was 5.67 while in DBS was 3.99 (37°C) and 3.75 (4°C); difference in plasma and DBS MLHRV values was 1.68 (37°C) and 1.92 (4°C) logs, respectively. Inter Class Correlation values were 0.943 (37°C) and 0.950 (4°C), showing high agreement. The median HCV core antigen value for plasma was 325.35 fmol/L, while it was 4.77 (37°C) and 4.64 (4°C) for DBS samples.

Conclusions: DBS can be used for sampling patients from distant resource-limited settings as an alternative to plasma for HCV RNA viral load estimation. Larger studies are required to evaluate feasibility of DBS in the Indian subcontinent, especially for role of HCV core antigen estimation.

Key words: Hepatitis C virus, Dried Blood Spots, Directly Acting Antivirals